



TRANSMITTAL FORM

Application Serial Number	09/155,708
Filing Date	April 5, 1999
First Named Inventor	Farrar
Group Art Unit	1635
Examiner Name	J. L. Epps
Attorney Docket No.	MUR-003
Patent No.	Not applicable
Issue Date	Not applicable

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SEP 23 2002

TECH CENTER 1600/2900

ENCLOSURES (check all that apply)

- | | | |
|---|--|---|
| <input checked="" type="checkbox"/> Fee Transmittal Form
<input checked="" type="checkbox"/> Check Attached
<input type="checkbox"/> Copy of Fee Transmittal Form
<input type="checkbox"/> Amendment/Response
<input type="checkbox"/> Preliminary
<input type="checkbox"/> After Final
<input type="checkbox"/> Affidavits/declaration(s)
<input type="checkbox"/> Letter to Official Draftsperson including Drawings [Total Sheets ____]
<input checked="" type="checkbox"/> Petition for Extension of Time
<input type="checkbox"/> Information Disclosure Statement
<input type="checkbox"/> Form PTO-1449
<input type="checkbox"/> Copies of IDS Citations
<input type="checkbox"/> Certified Copy of Priority Document(s)
<input checked="" type="checkbox"/> Sequence Listing submission
<input checked="" type="checkbox"/> Paper Copy (14 pgs.)
<input checked="" type="checkbox"/> Computer Readable Copy (1 diskette)
<input checked="" type="checkbox"/> Statement verifying identity of above (2 pgs.) | <input type="checkbox"/> Copy of Notice to File Missing Parts of Application (PTO-1553)
<input type="checkbox"/> Formal Drawing(s)
<input type="checkbox"/> Request For Continued Examination (RCE) Transmittal
<input type="checkbox"/> Power of Attorney (Revocation of Prior Powers)
<input type="checkbox"/> Terminal Disclaimer
<input type="checkbox"/> Executed Declaration and Power of Attorney for Utility or Design Patent Application
<input type="checkbox"/> Small Entity Statement
<input type="checkbox"/> CD(s) for large table or computer program
<input type="checkbox"/> Amendment After Allowance
<input type="checkbox"/> Request for Certificate of Correction
<input type="checkbox"/> Certificate of Correction (in duplicate) | <input type="checkbox"/> Notice of Appeal to Board of Patent Appeals and Interferences
<input type="checkbox"/> Appeal Brief (in triplicate)
<input type="checkbox"/> Status Inquiry
<input checked="" type="checkbox"/> Return Receipt Postcard
<input checked="" type="checkbox"/> Certificate of First Class Mailing under 37 C.F.R. 1.8
<input type="checkbox"/> Certificate of Facsimile Transmission under 37 C.F.R. 1.8
<input checked="" type="checkbox"/> Additional Enclosure(s) <ul style="list-style-type: none">• Copy of Patent Office Communication dated August 6, 2002 (12 pgs.) |
|---|--|---|

CORRESPONDENCE ADDRESS

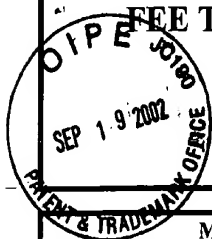
Direct all correspondence to: Patent Administrator
Testa, Hurwitz & Thibault, LLP
High Street Tower
125 High Street
Boston, MA 02110
Tel. No.: (617) 248-7000
Fax No.: (617) 248-7100

SIGNATURE BLOCK

Date: September 13, 2002
Reg. No. 43,153
Tel. No.: (617) 310-8168
Fax No.: (617) 248-7100

Respectfully submitted,

Diana M. Steel
Attorney for Applicant(s)
Testa, Hurwitz & Thibault, LLP
High Street Tower
125 High Street
Boston, MA 02110



FEE TRANSMITTAL
FY 2002

Complete if Known

Application Serial Number	09/155,708
Filing Date	April 5, 1999
First Named Inventor	Farrar
Group Art Unit	1635
Examiner Name	Janet L. Epps
Attorney Docket No.	MUR-003

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METHOD OF PAYMENT		FEE CALCULATION (continued)			
1. <input checked="" type="checkbox"/> Payment Enclosed: <input checked="" type="checkbox"/> Check <input type="checkbox"/> Money Order <input type="checkbox"/> Other		3. ADDITIONAL FEES			
2. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to credit or charge any fee indicated below for this submission to Deposit Account No. 20-0531. <input type="checkbox"/> Required Fees (copy of this sheet enclosed). <input checked="" type="checkbox"/> Additional fee required under 37 CFR 1.16 and 1.17. <input checked="" type="checkbox"/> Overpayment Credit.		Large Entity Fee (\$)	Small Entity Fee (\$)	Fee Description	Fee Paid
3. <input type="checkbox"/> Applicant claims small entity status.		130	65	Surcharge - late filing fee or oath	
		50	25	Surcharge - late provisional filing fee or cover sheet	
		130	130	Non-English specification	
		2,520	2,520	Request for ex parte reexamination	
		110	55	Extension for reply within first month	\$55.00
		400	200	Extension for reply within second month	
		920	460	Extension for reply within third month	
		1440	720	Extension for reply within fourth month	
		1960	980	Extension for reply within fifth month	
		320	160	Notice of Appeal	
		320	160	Filing a brief in support of an appeal	
		280	140	Request for oral hearing	
		130	130	Petitions to the Commissioner	
		180	180	Submission of Information Disclosure Statement	
		740	370	Filing a submission after final rejection (37 CFR 1.129(a))	
		740	370	For each additional invention to be examined (37 CFR 1.129(b))	
		100	100	Certificate of Correction for applicant's error	
		Other fee (Specify)			
		Other fee (Specify)			
		SUBTOTAL (3)			\$55.00
1. FILING FEE					
Large Entity Fee (\$)	Fee Description			Fee Paid	
740	Utility filing fee				
330	Design filing fee				
160	Provisional filing fee				
	Number Filed	Number Extra	Rate	Amount	
Total Claims	- 20 =		x \$ 18.00 =		
Independent Claims	- 3 =		x \$ 84.00 =		
<input type="checkbox"/> Multiple Dependent Claim(s), if any			\$280.00 =		
TOTAL:					
SMALL ENTITY DISCOUNT:					
SUBTOTAL (1)				\$0.00	
2. AMENDMENT CLAIM FEES					
Claims Remaining After Amend.	Highest No. Previously Paid For	Present Extra	Rate	Fee Paid	
Total	-	=	x \$ 18.00 =		
Indep.	-	=	x \$ 84.00 =		
<input type="checkbox"/> First Presentation of Multiple Dep. Claim			+ \$280.00 =		
TOTAL:				(\$)	
SMALL ENTITY DISCOUNT:				(\$)	
SUBTOTAL (2)				\$0.00	
CORRESPONDENCE ADDRESS		SIGNATURE BLOCK			
Direct all correspondence to: Patent Administrator Testa, Hurwitz & Thibault, LLP High Street Tower-125 High Street Boston, MA 02110 Tel. No.: (617) 248-7000 Fax No.: (617) 248-7100		Respectfully submitted, Diana M. Steel Attorney for the Applicants Testa, Hurwitz & Thibault, LLP High Street Tower-125 High Street Boston, MA 02110			

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UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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www.uspto.gov

AUG 08 2002

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/155,708	04/05/1999	GWENYTH JANE FARRAR	MUR-7520 mur-003	9036

7590 08/06/2002
Testa, Hurwitz & Thibault, LLP
High Street Tower
125 High Street
Boston, MA 02110



EXAMINER

EPPS, JANET L

ART UNIT	PAPER NUMBER
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1635

DATE MAILED: 08/06/2002

25

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

SEP 19 2002

Application No.

09/155,708

Applicant(s)

FARRAR ET AL.

Examiner

Planet L. Epps

Art Unit

1635

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) ____ is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) ____ is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____ 6) ☒ Other: *Notice to Comply Requirements*.

Art Unit: 1635

Sequence Rules

The communication filed 7-02-2002 is not fully responsive to the Office communication mailed 6-05-2002 for the reason(s) set forth on the attached Notice To Comply With The Sequence Rules or CRF Diskette Problem Report. Applicant must comply with the requirements of the sequence rules (37 CFR 1.821 - 1.825) before the application can be examined under 35 U.S.C. §§ 131 and 132.

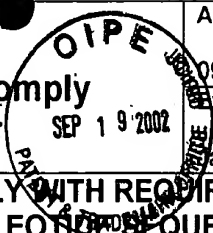
Since the reply appears to be bona fide attempt to comply with the requirements of the sequence rules (37 CFR 1.821 - 1.825), applicant is given a TIME PERIOD of **ONE (1) MONTH** from the mailing date of this communication within which to correct the deficiency so as to comply with the sequence rules (37 CFR 1.821 - 1.825) in order to avoid abandonment of the application under 37 CFR 1.821(g). EXTENSIONS OF THIS TIME PERIOD MAY BE GRANTED UNDER 37 CFR 1.136(a).

Any inquiry concerning this communication should be directed to Examiner **Janet L. Epps**, Art Unit **1635**, whose telephone number is (703) 308-8883.

Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center receptionist whose telephone number is (703) 308-0196.


JLE

July 30, 2002

Notice to Comply

Application No.

09/155,708

Examiner

Janet Epps

Applicant(s)

Farrar et al.

Art Unit

1635

NOTICE TO COMPLY WITH REQUIREMENTS FOR PATENT APPLICATIONS CONTAINING NUCLEOTIDE SEQUENCE AND/OR AMINO ACID SEQUENCE DISCLOSURES

Applicant must file the items indicated below within the time period set the Office action to which the Notice is attached to avoid abandonment under 35 U.S.C. § 133 (extensions of time may be obtained under the provisions of 37 CFR 1.136(a)).

The nucleotide and/or amino acid sequence disclosure contained in this application does not comply with the requirements for such a disclosure as set forth in 37 C.F.R. 1.821 - 1.825 for the following reason(s):

- ☒ 1. This application clearly fails to comply with the requirements of 37 C.F.R. 1.821-1.825. Applicant's attention is directed to the final rulemaking notice published at 55 FR 18230 (May 1, 1990), and 1114 OG 29 (May 15, 1990). If the effective filing date is on or after July 1, 1998, see the final rulemaking notice published at 63 FR 29620 (June 1, 1998) and 1211 OG 82 (June 23, 1998).
- ☐ 2. This application does not contain, as a separate part of the disclosure on paper copy, a "Sequence Listing" as required by 37 C.F.R. 1.821(c).
- ☐ 3. A copy of the "Sequence Listing" in computer readable form has not been submitted as required by 37 C.F.R. 1.821(e).
- ☒ 4. A copy of the "Sequence Listing" in computer readable form has been submitted. However, the content of the computer readable form does not comply with the requirements of 37 C.F.R. 1.822 and/or 1.823, as indicated on the attached copy of the marked -up "Raw Sequence Listing."
- ☐ 5. The computer readable form that has been filed with this application has been found to be damaged and/or unreadable as indicated on the attached CRF Diskette Problem Report. A Substitute computer readable form must be submitted as required by 37 C.F.R. 1.825(d).
- ☐ 6. The paper copy of the "Sequence Listing" is not the same as the computer readable form of the "Sequence Listing" as required by 37 C.F.R. 1.821(e).
- ☐ 7. Other

Applicant Must Provide:

- ☒ An initial or substitute computer readable form (CRF) copy of the "Sequence Listing".
- ☒ An initial or substitute paper copy of the "Sequence Listing", as well as an amendment directing its entry into the specification.
- ☒ A statement that the content of the paper and computer readable copies are the same and, where applicable, include no new matter, as required by 37 C.F.R. 1.821(e) or 1.821(f) or 1.821(g) or 1.825(b) or 1.825(d).

For questions regarding compliance to these requirements, please contact:

For Rules Interpretation, call (703) 308-4216

For CRF Submission Help, call (703) 308-4212

PatentIn Software Program Support

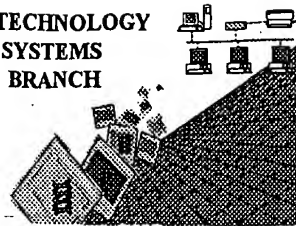
Technical Assistance.....703-287-0200

To Purchase PatentIn Software.....703-306-2600

PLEASE RETURN A COPY OF THIS NOTICE WITH YOUR REPLY



BIOTECHNOLOGY
SYSTEMS
BRANCH



1035 #29
73002
JE

RAW SEQUENCE LISTING ERROR REPORT

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JUL 26 2002

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) detected errors when processing the following computer readable form: **TECH CENTER 1600/2900**

Application Serial Number: 09/155,708A
Source: 1600
Date Processed by STIC: 7/19/2002

THE ATTACHED PRINTOUT EXPLAINS DETECTED ERRORS.

PLEASE FORWARD THIS INFORMATION TO THE APPLICANT BY EITHER:

- 1) INCLUDING A COPY OF THIS PRINTOUT IN YOUR NEXT COMMUNICATION TO THE APPLICANT, WITH A NOTICE TO COMPLY or,
- 2) TELEPHONING APPLICANT AND FAXING A COPY OF THIS PRINTOUT, WITH A NOTICE TO COMPLY

FOR CRF SUBMISSION QUESTIONS, PLEASE CONTACT MARK SPENCER, 703-308-4212.

FOR SEQUENCE RULES INTERPRETATION, PLEASE CONTACT ROBERT WAX, 703-308-4216.

PATENTIN 2.1 e-mail help: patin21help@uspto.gov or phone 703-306-4119 (R. Wax)

PATENTIN 3.0 e-mail help: patin3help@uspto.gov or phone 703-306-4119 (R. Wax)

TO REDUCE ERRORED SEQUENCE LISTINGS, PLEASE USE THE **CHECKER VERSION 3.1 PROGRAM**, ACCESSIBLE THROUGH THE U.S. PATENT AND TRADEMARK OFFICE WEBSITE. SEE BELOW FOR ADDRESS:

<http://www.uspto.gov/web/offices/pac/checker>

Applicants submitting genetic sequence information electronically on diskette or CD-Rom should be aware that there is a possibility that the disk/CD-Rom may have been affected by treatment given to all incoming mail.

Please consider using alternate methods of submission for the disk/CD-Rom or replacement disk/CD-Rom.

Any reply including a sequence listing in electronic form should NOT be sent to the 20231 zip code address for the United States Patent and Trademark Office, and instead should be sent via the following to the indicated addresses:

1. EFS-Bio (<<http://www.uspto.gov/ebc/efs/downloads/documents.htm>> , EFS Submission User Manual - ePAVE)
2. U.S. Postal Service: U.S. Patent and Trademark Office, Box Sequence, P.O. Box 2327, Arlington, VA 22202
3. Hand Carry directly to:
U.S. Patent and Trademark Office, Technology Center 1600, Reception Area, 7th Floor, Examiner Name, Sequence Information, Crystal Mall One, 1911 South Clark Street, Arlington, VA 22202
Or
U.S. Patent and Trademark Office, Box Sequence, Customer Window, Lobby, Room 1B03, Crystal Plaza Two, 2011 South Clark Place, Arlington, VA 22202
4. Federal Express, United Parcel Service, or other delivery service to: U.S. Patent and Trademark Office, Box Sequence, Room 1B03-Mailroom, Crystal Plaza Two, 2011 South Clark Place, Arlington, VA 22202

Revised 01/29/2002



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JUL 26 2002

TECH CENTER 1600/2900



1600

RAW SEQUENCE LISTING

DATE: 07/19/2002

PATENT APPLICATION: US/09/155,708A

TIME: 13:36:24

Input Set : A:\MUR-003.ST25.txt

Output Set: N:\CRF3\07192002\I155708A.raw

3 <110> APPLICANT: Farrar, Jane
 4 Humphries, Peter
 5 Kenna, Paul
 7 <120> TITLE OF INVENTION: Genetic Suppression and Replacement
 9 <130> FILE REFERENCE: MUR-003
 11 <140> CURRENT APPLICATION NUMBER: US 09/155,708A
 12 <141> CURRENT FILING DATE: 1999-04-05
 14 <150> PRIOR APPLICATION NUMBER: PCT/GB97/00929
 15 <151> PRIOR FILING DATE: 1997-04-02
 17 <160> NUMBER OF SEQ ID NOS: 28
 19 <170> SOFTWARE: PatentIn version 3.0
 21 <210> SEQ ID NO: 1
 22 <211> LENGTH: 617
 23 <212> TYPE: DNA
 24 <213> ORGANISM: mammalian
 26 <220> FEATURE:

pp. 2, 6-7

**Does Not Comply
Corrected Diskette Needed**

W--> 27 <221> NAME/KEY: n

28 <222> LOCATION: (1)..(617)

29 <223> OTHER INFORMATION: any

31 <400> SEQUENCE: 1

W--> 32 tcccttntgn tagattgcan nncccaataa aanaaggnc cgttaaagg cttatcgaaa 60
 W--> 34 ttaatacgac tcaactatang gagacccaag cttagagtca tccagctgga gccctgagtg 120
 36 gctgagctca ggccttcgca gcattcttgg gtgggagcag ccacgggtca gccacaaggg 180
 38 ccacagccat gaattggcaca gaaggcccta acttctacgt gcccttctcc aatgcgacgg 240
 40 gtgtggtacg cagccccttc gagtaccac agtactacct ggctgagcca tggcagttct 300
 42 ccatgctggc cgcctacatg tttctgctga tcgtgctggg cttccccatc aacttctca 360
 44 cgtctacgt caccgtccag cacaagaagc tgcgcacgcc tctcaactac atcctggctc 420
 W--> 46 aacctagccg tggctgaact cttcatggtc ctangtggct tcaccagcac ctctacanct 480
 W--> 48 ctctgcatgg atactcgtct tcgggcccac aggatgcaat tgganggctc tttgcacctg 540
 W--> 50 gngggaaatt gcctgtggtc ctngtggctn ggncaccaac gtactggtng tgtntancec 600
 52 agaacaactc cgctccc 617

54 <210> SEQ ID NO: 2

55 <211> LENGTH: 639

56 <212> TYPE: DNA

57 <213> ORGANISM: mammalian

59 <220> FEATURE:

W--> 60 <221> NAME/KEY: n

61 <222> LOCATION: (1)..(639)

62 <223> OTHER INFORMATION: any

64 <220> FEATURE:

65 <221> NAME/KEY: misc_feature

66 <223> OTHER INFORMATION: C to G change at position 271

68 <400> SEQUENCE: 2

RAW SEQUENCE LISTING

DATE: 07/19/2002

PATENT APPLICATION: US/09/155,708A

TIME: 13:36:24

Input Set : A:\MUR-003.ST25.txt

Output Set: N:\CRF3\07192002\I155708A.raw

W--> 69 ggnnnnttgg gtcgcgatt naagaactca nggncccgca gcattcttgg gtgggagcag 60
 W--> 71 ctacgggtca gccacaagg ccacagccat gaatggcaca gaangcccta acttctacgt 120
 73 gcccttctcc aatgcgacgg gtgtggtacg cagcccttc gagtaccac agtactacct 180
 75 ggctgagcca tggcagttct ccatgctggc cgctacatg tttctgctga tcgtgctggg 240
 77 cttcccatc aacttctca cgctctacgt gaccgtccag cacaagaagc tgcgcacgcc 300
 W--> 79 tctcaactac atctgctca acctancegt gngtgaactc ttcattgttc taggtggctt 360
 W--> 81 caccancaac ctctanacct ctctgcatg anacttctc ttccggccca caggatgcaa 420
 W--> 83 tttggaaggn ttctttaac acccgggggg gaaaattgc ctgtggtcct tgggtgtccg 480
 W--> 85 gncancnaac ggtacttgtg gnttttaanc cataaacaat tccgcttcgg gaaaaacatg 540
 W--> 87 ccancntggg gtttcttca ctnggttang ggnggctgc cccacccca atccnggtg 600
 W--> 89 gtcaantaat cccaagggcn nantgcnctt ttaaacaaa 639
 91 <210> SEQ ID NO: 3
 92 <211> LENGTH: 686
 93 <212> TYPE: DNA
 94 <213> ORGANISM: mammalian
 96 <220> FEATURE:
 W--> 97 <221> NAME/KEY: n
 98 <222> LOCATION: (1)..(686) *no explanation of what 'n's' represent (see p. 6)*
 100 <220> FEATURE:
 101 <221> NAME/KEY: misc_feature
 102 <223> OTHER INFORMATION: CCC to CTC change at 216-218
 104 <400> SEQUENCE: 3
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 109 gcctgagctc agccacaagg gccacagcca tgaatggcac agaaagccct aacttctacg 180
 111 tgcccttctc caatgcgacg ggtgtggtac gcagcctctt cgagtaccac cagtactacc 240
 113 tggtgagcc atggcagttc tccatgctgg ccgcctacat gtttctgctg atcgtgctgg 300
 115 gcttcccat caacttctc acgctctacg tcaccgtcca gcacaagaag ctgcgcacgc 360
 W--> 117 ctctcaacta catctgctc aacctancegt tggtgaact cttcatggc ctangtggct 420
 W--> 119 tcaccancac cctctacacc tctctgcatg gataattcgt ctccgggcc acaggatgca 480
 W--> 121 atttggaagg cttctttgca ncctgggncg ggaattgcc tgnctctg gtggtcctgg 540
 W--> 123 ccatcaacng tacttgttgt ntnttaccba tnaacaatc cgctccggga aaacatgcac 600
 W--> 125 atgggnttgc ctactnggt ctggggcngg cnccccaccc caccgccgt ggtcanttat 660
 W--> 127 cccangggcn aatgccttn annaaa 686
 129 <210> SEQ ID NO: 4
 130 <211> LENGTH: 787
 131 <212> TYPE: DNA
 132 <213> ORGANISM: mammalian
 134 <220> FEATURE:
 W--> 135 <221> NAME/KEY: n
 136 <222> LOCATION: (1)..(787)
 137 <223> OTHER INFORMATION: any
 139 <400> SEQUENCE: 4
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 W--> 142 tatcgaaatt aatacgactc actatangga gaccaagctt ggctggctctg atgagtcctg 120
 W--> 144 gaggacgaaa cgtagagtct anaggccct attctatagt gtcacctaaa tgctaganct 180
 146 cgctgatcag cctcgactgt gccttctagt tgccagccat ctgttgtttg cccctcccc 240
 W--> 148 gtgccttctc tgancctgga aggtgccact cccactgtcc tttcctaata aaatgagnaa 300
 W--> 150 ttgcntctca ttgtctgagt agtgcaccc aatctggggg tgggtggggc agnacacnag 360

RAW SEQUENCE LISTING

DATE: 07/19/2002

PATENT APPLICATION: US/09/155,708A

TIME: 13:36:24

Input Set : A:\MUR-003.ST25.txt

Output Set: N:\CRF3\07192002\I155708A.raw

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W--> 152 gggaagatgg gaaaacatac aggcattgctg gggangccgt ggntctatgn ctcnagaggcg 420
W--> 154 aaaaaacact ggggnctagg ggtacccccc cccctgtacg gccataacnc gnggtttgtg 480
W--> 156 gtaccacta acgtanntgc accctaccgg ncttcttct cctcttncca tttccgggtc 540
W--> 158 cctcaccnaa cgggccttng tcatacttng gnccaccaa tanagttagt tttgccccca 600
W--> 160 aagtccctna tgacctntaa gaccttcann anccccctt ntttnaaana nccnnnnnnn 660
W--> 162 nnnnannnnn cngnaaaaaa aacaactaat tttgggaacc ccccccnaa aaccttttcc 720
W--> 164 ntntcccccc natttaatnt tnnntnccc ccccccccc ccccnntttt tnnncncccn 780
W--> 166 nnannng 787
168 <210> SEQ ID NO: 5
169 <211> LENGTH: 665
170 <212> TYPE: DNA
171 <213> ORGANISM: mammalian
173 <220> FEATURE:
W--> 174 <221> NAME/KEY: n
175 <222> LOCATION: (1)..(665)
176 <223> OTHER INFORMATION: any
178 <400> SEQUENCE: 5
W--> 179 nccccgcgcc ntttnaaana anccnagcct ctggcnaact ananaaccac tgcttactgg 60
W--> 181 ctatcnaaa ttaatacgac tcactatagg gagaccaag ctttactcga actgatgagt 120
W--> 183 ccgtgaggac gaaaggctgc tctananggc cctattctat antgtcacct aaatgctaga 180
185 gctcgtgat cagcctcgac tgtgccttct aattgccagc catctgttgt ttgccccctc 240
187 cccgtgcctt ccttgaccct ggaaggtgcc actcccaactg tcctttccta ataaaatgaa 300
W--> 189 gatnttncat cncattgtct gagtaagtgt cattctatc tggggggtgg ggtggggcac 360
W--> 191 gacancaang gggaagattg ggaaaaaata ncaggcntgc tggggatncc gtgggctcta 420
W--> 193 tngcttctga agcggaaaaa acaactgggg ctctangggg tatccccccc cccctgtaac 480
W--> 195 gngcattaata cncgggggtg ttgtggttac cccaacttaa cgctancttg caacgccena 540
W--> 197 acgccccncc tttcctttct cccttccttc ncccccttc cgggttcccn tcaaccnnaa 600
W--> 199 tgggggcccc ttaggtccaa ttatgcttcg gccccnccn aaactaatag gtnggttctt 660
W--> 201 tngcc 665
204 <210> SEQ ID NO: 6
205 <211> LENGTH: 624
206 <212> TYPE: DNA
207 <213> ORGANISM: mammalian
209 <220> FEATURE:
W--> 210 <221> NAME/KEY: n
211 <222> LOCATION: (1)..(624)
212 <223> OTHER INFORMATION: any
214 <400> SEQUENCE: 6
W--> 215 nnnncttntc tanngcttgg taccganctc ggatccacta gtnaacggcc gccagtgtgc 60
W--> 217 tggaattcc cagaggnaact ctggggcaga caagatgaga caccctttcc tttctttacc 120
219 taagggcctc caccgatgt cacttgccc cctctgcaag ccaattaggc cccggtggca 180
221 gcagtgggat tagcgttagt atgatctct gcggatgctg aatcagcctc tggttaggg 240
223 agagaaggtc actttataag ggtctggggg ggtcagtgcc ctggagtggc gctgtgggag 300
W--> 225 ccgtcagtgg ctgagctcgc caagcagcct tggctctgt ctacgaaaan cccgtggggc 360
W--> 227 agcctcnana accgcagcca tgaacggcac agaaggcccc aatttttatg tgcccttctc 420
W--> 229 caacgtcaca ngcgtggtgc ggaacccctt cnancnccg cagtactacc tggcggaacc 480
W--> 231 atggcagttc tccatgctgg cancgtaac gtctctgctc tegtgtggg nttcccatca 540
W--> 233 actcctcacg ctctagtcca ccgtaanna naaaaaactg cgcaaccctt caactaaatc 600
235 ctgctcaatt gggcgtgggt gaac 624

```

RAW SEQUENCE LISTING

DATE: 07/19/2002

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TIME: 13:36:24

Input Set : A:\MUR-003.ST25.txt

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```

237 <210> SEQ ID NO: 7
238 <211> LENGTH: 630
239 <212> TYPE: DNA
240 <213> ORGANISM: mammalian
242 <220> FEATURE:
W--> 243 <221> NAME/KEY: n
244 <222> LOCATION: (1)..(630)
245 <223> OTHER INFORMATION: any
247 <220> FEATURE:
248 <221> NAME/KEY: misc_feature
249 <223> OTHER INFORMATION: TTT to TCT transversion at position 189-191
251 <400> SEQUENCE: 7
W--> 252 nnnntcttcc nctttcgttt gttgnanant cannaaan aggcgncccg gaagggtgtca 60
W--> 254 gtgcctggag ttgcgctgtg ggaccgctca ntggctgagc tcgccaagca gccttggtct 120
256 ctgtctacga agagcccgtg gggcagcctc gagagccgca gccatgaacg gcacagaggg 180
W--> 258 ccccaatttc tatgtgccct tctccaacgt cacaggcgtg gtgcggagcc ccttcgancn 240
260 tccgcagtac tacctggcgg aacctatggca gttctccatg ctggcagcgt acatgttcct 300
262 gctcatcgtg ctgggcttcc ccatcaactt cctcacgctc tacgtcaccg tacagcacia 360
W--> 264 gaagctgcgc acaccccctc aactacatcc tggctcaact tgggcccgtg ggnttggaa 420
W--> 266 ctccctccca ttgggtcntt cccggaangg antncaccaa ccacccctct aacacatcaa 480
W--> 268 ctcccatggg ctacttcgtt cttttggggc ccncaggctg ttaatctcga agggcttctt 540
W--> 270 tgccacacct tggaaagtga atncacctgt ggttccctgg tggctntggc cattaacgct 600
272 acttgtggtc ctgcaacca ataacaattc 630
275 <210> SEQ ID NO: 8
276 <211> LENGTH: 649
277 <212> TYPE: DNA
278 <213> ORGANISM: mammalian
280 <220> FEATURE:
W--> 281 <221> NAME/KEY: n
282 <222> LOCATION: (1)..(649)
283 <223> OTHER INFORMATION: any
285 <400> SEQUENCE: 8
W--> 286 tcccctnntt tttgtagcnc tgccaanaaa aaaggccagc tcacaggana antananaac 60
W--> 288 ccactgctta ctggcttanc naaattaata cgactcacta tagggagacc caagcttggc 120
290 acatctgatg agtccgtgag gacgaaaaaa ttggtctaca gggccctatt ctataatgtc 180
W--> 292 acctaaatgc tanagctcgc tgatcatcct cnactgtgcc ttctacttgc cagcctctn 240
294 ttgtttgccc ctccccctg ccttccttga ccttggagg tgccactccc actgtccttt 300
296 cctaataaaa tgaggaaatt gcatcgcatg gtctgagtaa gtgtcattct attctggggg 360
W--> 298 gtgggggtgg gcaggacnnc aaaggggaag attgggaaat acaatancca agganctctc 420
W--> 300 ccccnnggta attgaggatt nggctctntc gcttccttaa ggcngaaana aacaactngg 480
W--> 302 gcgctnccgg gtttccccn ccncacctnt tagcgcgca ttantcgcg cgggtgttgt 540
W--> 304 tgttactccc cacctnaacg ctacanttgc cagcgcctaa cgcceccct tncntttctt 600
W--> 306 cctcctttc tncacttcc ccggtttcc cnccaancc naaatcngg 649
308 <210> SEQ ID NO: 9
309 <211> LENGTH: 681
310 <212> TYPE: DNA
311 <213> ORGANISM: mammalian
313 <220> FEATURE:
W--> 314 <221> NAME/KEY: n

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315 <222> LOCATION: (1)..(681)

316 <223> OTHER INFORMATION: any

318 <400> SEQUENCE: 9

```

W--> 319 nnttggtggt ncagtinggat gtctatataa gcagagnctc tggctaacta gnagaaccca 60
      321 ctgcttactg gcttatcgaa attaatacga ctactatag ggagacccaa gcttggtacc 120
W--> 323 gagctcngat ccactagtaa cggccgccag tgtgctggaa ttcttcagcg cccacgacca 180
      325 gtgactatcc cctgctcaag ctgtgattcc gagaccctg ccaccactac tgcattcagc 240
W--> 327 ggggacccca ngctaattggg actcgacatg ggttgccccc acggcanctc cctacanctt 300
W--> 329 gggccanctn cacttttccc aaagncctaa atctccgcct ctcggctcnt taangttngg 360
W--> 331 ggtgggganc tgtgctgtgg gaaacaaccc agaananact tgggcagcat ggngctactg 420
W--> 333 aaagtncatt ttgaacagaa naaacggtcc antttggccc aaggnnncng ntccataaant 480
W--> 335 ggttctcctt ntttggtngn ntcncnctt tccnctngg aatgttctg aaaaattnaa 540
W--> 337 cnccaaaaaa gaacaaattg aaaaatantt ctnaaaaccc tttgttncc cccccccna 600
W--> 339 aaagggaagg ggnnggnncc tttttnttcc cccccgggg ggggaaaatt ttnnnaanc 660
W--> 341 cccccccccc cnttttttn a 681

```

344 <210> SEQ ID NO: 10

345 <211> LENGTH: 612

346 <212> TYPE: DNA

347 <213> ORGANISM: mammalian

349 <220> FEATURE:

W--> 350 <221> NAME/KEY: n

351 <222> LOCATION: (1)..(612)

352 <223> OTHER INFORMATION: any

354 <400> SEQUENCE: 10

```

W--> 355 ttatacnaca cactatangg agaccaagct tggtagcgag ctggatcca ctagtaacgg 60
W--> 357 ccgccagtgt gctggaattc ttcancgccc aggaccagga ctatcccctg ctaagctgt 120
W--> 359 gattccgaga cccctgccac cactactgca ttcacggggg atcccaggct agtgggacnc 180
      361 gacatgggta tccccaggg cagctcccta cagcttgggc catctgcact tttcccaagg 240
W--> 363 ccctaagtct ccgctctggt gctcgtaan gtntggggtg ggagctgtgc tgtgggaaac 300
W--> 365 aacccgact acacttgga agcatggcgc tgcgaaagt caagtttgaa cagaaaaaan 360
W--> 367 ggggtcaagt ggcccaaggg ctctggtcca gggaaactgg gttncncnc nngttttngg 420
W--> 369 tttgngtgca tcanctncca aaaaanannnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 480
W--> 371 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 540
W--> 373 nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn nnnnnnnnnn 600
W--> 375 nnnnnnnnnn nn 612

```

377 <210> SEQ ID NO: 11

378 <211> LENGTH: 20

379 <212> TYPE: DNA

380 <213> ORGANISM: Artificial sequence

382 <220> FEATURE:

383 <221> NAME/KEY: misc_feature

384 <223> OTHER INFORMATION: Forward mutation primer

386 <400> SEQUENCE: 11

387 catggcgctg ctgaaagtca

20

390 <210> SEQ ID NO: 12

391 <211> LENGTH: 20

392 <212> TYPE: DNA

393 <213> ORGANISM: Artificial sequence

395 <220> FEATURE:

RAW SEQUENCE LISTING ERROR SUMMARY
PATENT APPLICATION: US/09/155,708ADATE: 07/19/2002
TIME: 13:36:25Input Set : A:\MUR-003.ST25.txt
Output Set: N:\CRF3\07192002\I155708A.rawPlease Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

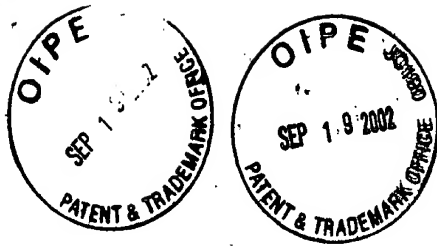
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Seq#:1; N Pos. 597
Seq#:2; N Pos. 3,4,5,6,21,31,34,104,326,333,366,376,392,398,430,482,485,487
Seq#:2; N Pos. 503,509,544,546,563,569,574,596,600,606,620,621,623,626,628
Seq#:3; N Pos. 1,2,3,10,19,31,49,387,414,427,501,508,524,549,561,563,572
Seq#:3; N Pos. 606,617,628,632,656,665,670,680,682,683
Seq#:4; N Pos. 2,5,32,39,87,142,178,254,298,305,353,358,395,403,410,414,435
Seq#:4; N Pos. 469,472,496,497,511,516,527,548,559,569,572,583,609,617,629
Seq#:4; N Pos. 630,632,641,645,649,651,654,655,656,657,658,659,660,661,662
Seq#:4; N Pos. 663,664,666,667,668,669,672,674,680,707,709,721,723,731,739
Seq#:4; N Pos. 742,743,744,745,747,765,766,772,773,775,780,781,782,784,785
Seq#:4; N Pos. 786
Seq#:5; N Pos. 1,2,11,15,19,22,25,36,42,44,67,145,147,162,304,307,312,365
Seq#:5; N Pos. 369,391,397,408,422,456,482,492,526,539,548,571,590,598,636
Seq#:5; N Pos. 640,653,662
Seq#:6; N Pos. 1,2,3,4,8,13,14,27,43,77,350,367,369,431,452,454,457,503,531
Seq#:6; N Pos. 568,569,571
Seq#:7; N Pos. 1,2,3,4,11,25,27,29,33,34,38,40,46,91,238,240,408,413,438
Seq#:7; N Pos. 448,452,454,513,564,586
Seq#:8; N Pos. 7,8,19,27,49,52,55,57,79,81,193,212,236,240,378,379,407,415
Seq#:8; N Pos. 417,425,441,448,464,469,478,486,500,504,509,515,524,556,566
Seq#:8; N Pos. 592,595,613,633,638,641,647
Seq#:9; N Pos. 1,2,11,16,37,52,127,251,287,297,307,310,325,349,354,358,369
Seq#:9; N Pos. 395,397,413,426,441,452,465,466,468,469,471,479,489,491,498
Seq#:9; N Pos. 500,501,505,507,514,518,538,542,568,573,588,599,613,614,617
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Seq#:10; N Pos. 7,18,85,179,270,273,360,404,408,411,412,418,426,434,437,445
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Seq#:10; N Pos. 507,508,509,510,511,512,513,514,515,516,517,518,519,520,521
Seq#:10; N Pos. 522,523,524,525,526,527,528,529,530,531,532,533,534,535,536
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Seq#:10; N Pos. 552,553,554,555,556,557,558,559,560,561,562,563,564,565,566
Seq#:10; N Pos. 567,568,569,570,571,572,573,574,575,576,577,578,579,580,581
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Seq#:10; N Pos. 597,598,599,600,601,602,603,604,605,606,607,608,609,610,611
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Seq#:13; N Pos. 6,10,12,15,104,377,410,414,421,437,472,483,502,526,550,556
Seq#:13; N Pos. 563,585,601
Seq#:14; N Pos. 2,11,19,371,376,402,449,453,454,464,475,485,486,494,496,497
Seq#:14; N Pos. 511,519,524,526,527,529,530,533,534,535,536,537,538,541,542
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RAW SEQUENCE LISTING ERROR SUMMARY DATE: 07/19/2002
PATENT APPLICATION: US/09/155,708A TIME: 13:36:25

Input Set : A:\MUR-003.ST25.txt

Output Set: N:\CRF3\07192002\I155708A.raw

Seq#:14; N Pos. 572,574,576,577,578,581,582,583,584,585,587,588,592,593,594
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Seq#:14; N Pos. 618,622,623,625,626,627,628,631,633,634,635,636,637,638,640
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Seq#:14; N Pos. 665,666,667,669,670,671,672,673,674,675,677,679
Seq#:15; N Pos. 1,2,6,14,25,27,44,50,53,54,97,153,293,311,312,341,368,373
Seq#:15; N Pos. 400,430,433,436,439,446,456,469,474,475,479,480,487,494,496
Seq#:15; N Pos. 501,505,521,522,525,527,532,534,537,545,546,551,552,553,559
Seq#:15; N Pos. 584,586,590,595,604,609,626,630,633,635,637,644,645,646,647
Seq#:15; N Pos. 650,653,657,659,661,666,669,671,673,674,678
Seq#:16; N Pos. 1,4,7,15,25,33,34,41,122,153,251,308,311,346,366,416,459
Seq#:16; N Pos. 497,563,567,600,616,631,641,682,683,685,691,695,698,699,700
Seq#:16; N Pos. 701,702,703,704,705,706,707,708,709,710,711,712,713,714,715
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Seq#:18; N Pos. 1,7,8,12,15,20,34,35,44,46,74,301,327,361,366,386,459,473
Seq#:18; N Pos. 495,518,590,615,640,642,654,669




PATENT
Attorney Docket No. MUR-003
(7593/4)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Farrar et al.
SERIAL NO.: 09/155,708 GROUP NO.: 1635
FILING DATE: April 5, 1999 EXAMINER: Janet L. Epps
TITLE: GENETIC SUPPRESSION AND REPLACEMENT

CERTIFICATE OF FIRST CLASS MAILING UNDER 37 C.F.R. 1.8

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Submitted herewith are:

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